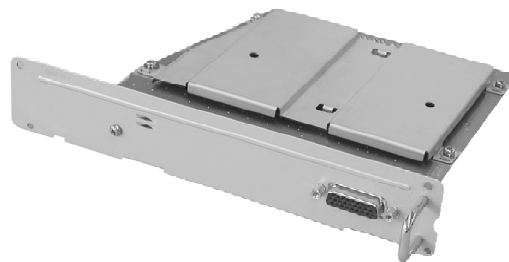


ORDER NO. ITD0207023C2

# Service Manual

Tuner Terminal Board

TY-42TM5H / TY-37TM5H



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## WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

# Panasonic®


## 1. Prevention of Electro Static Discharge (ESD) to Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.

2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
  3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
  4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
  5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
  6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
  7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
- Caution**
- Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

#### IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the schematic diagrams, Exploded Views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

## 2. About lead free solder (PbF)

**Note:** Lead is listed as (Pb) in the periodic table of elements.

In the information below, Pb will refer to Lead solder, and PbF will refer to Lead Free Solder.

The Lead Free Solder used in our manufacturing process and discussed below is (Sn+Ag+Cu). That is Tin (Sn), Silver (Ag) and (Cu) although other types are available. This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be used.

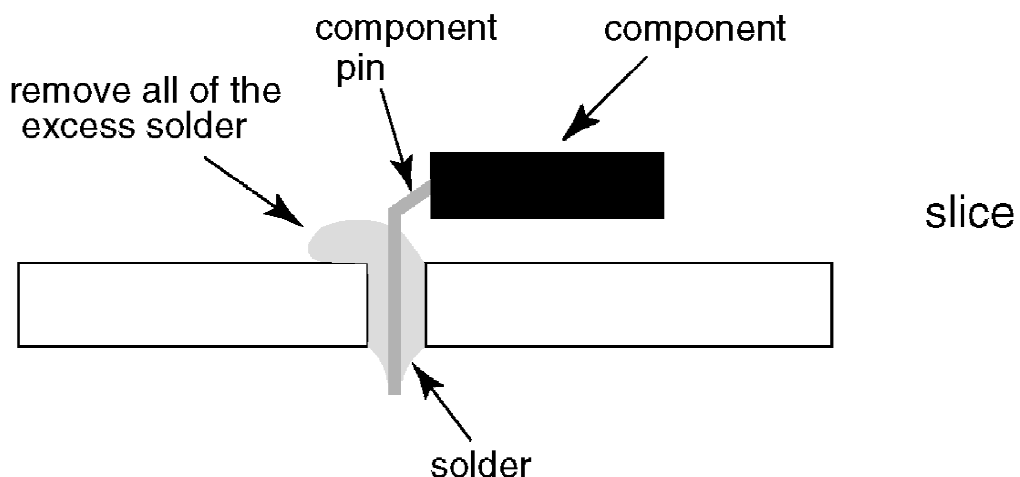
PCBs manufactured using lead free solder will have the PbF within a leaf Symbol



stamped on the back of PCB.

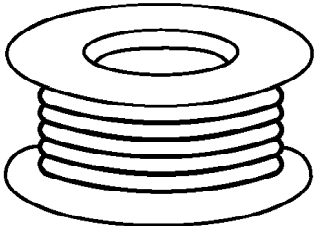
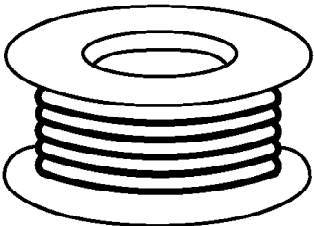
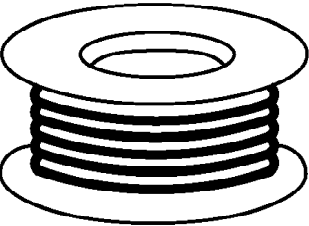
**Caution**

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 ~F (30~40~C) higher. Please use a high temperature soldering iron and set it to  $700 \pm 20$  ~F ( $370 \pm 10$  ~C).
- Pb free solder will tend to splash when heated too high (about 1100 ~F or 600~C).  
If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.
- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side. (see figure below)



**Suggested Pb free solder**

There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also be used.

0.3mm X 100g	0.6mm X 100g	1.0mm X 100g
		

### 3. Conductor Views

#### 3.1. H-Board (TY-37/42TM5H)

### 4. Block and Schematic Diagrams

#### 4.1. Schematic Diagram Notes

#### 4.2. H-Board (TY-37/42TM5H) Block and Schematic Diagrams

### 5. Replacement Parts List

#### 5.1. Replacement Parts List Notes

### Important Safety Notice

*Components identified by  $\triangle$  mark have special characteristics important for safety.  
When replacing any of these components, use only manufacturer's specified parts.*

#### RTL (Retention Time Limited)

**Note:** The marking (RTL) indicates that the Retention Time is Limited for this item.  
After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is dependant on the type of assembly, and in accordance with the laws governing part and product retention.  
After the end of this period, the assembly will no longer be available.

Abbreviation of part name and description

#### 1. Resistor

Example:

ERD25TJ104     $\underline{C}$  100KOHM,  $\underline{J}$  1/4W  
Type                      Allowance

#### 2. Capacitor

Example:

ECKF1H103ZF     $\underline{C}$  0.01UF,  $\underline{Z}$  50V  
Type                      Allowance

Type	Allowance
C : Carbon	F : $\pm 1\%$
F : Fuse	G : $\pm 2\%$
M : Metal Oxide	J : $\pm 5\%$
Metal Film	K : $\pm 10\%$
S : Solid	M : $\pm 20\%$
W : Wire Wound	

Type	Allowance
C : Ceramic	C : $\pm 0.25\text{pF}$
E : Electrolytic	D : $\pm 0.5\text{pF}$
P : Polyester	F : $\pm 1\text{pF}$
Polypropylene	G : $\pm 3\text{pF}$
T : Tantalum	J : $\pm 5\text{pF}$
	K : $\pm 10\text{pF}$
	L : $\pm 15\text{pF}$
	M : $\pm 20\text{pF}$
	P : +100%, -0%
	Z : +80%, -20%

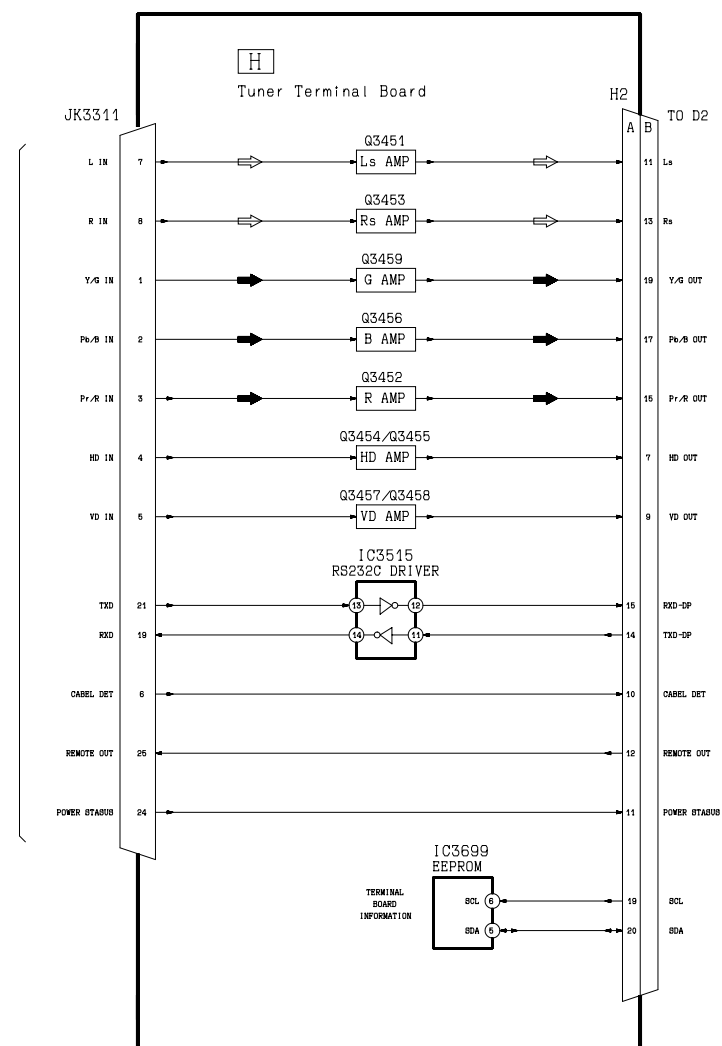
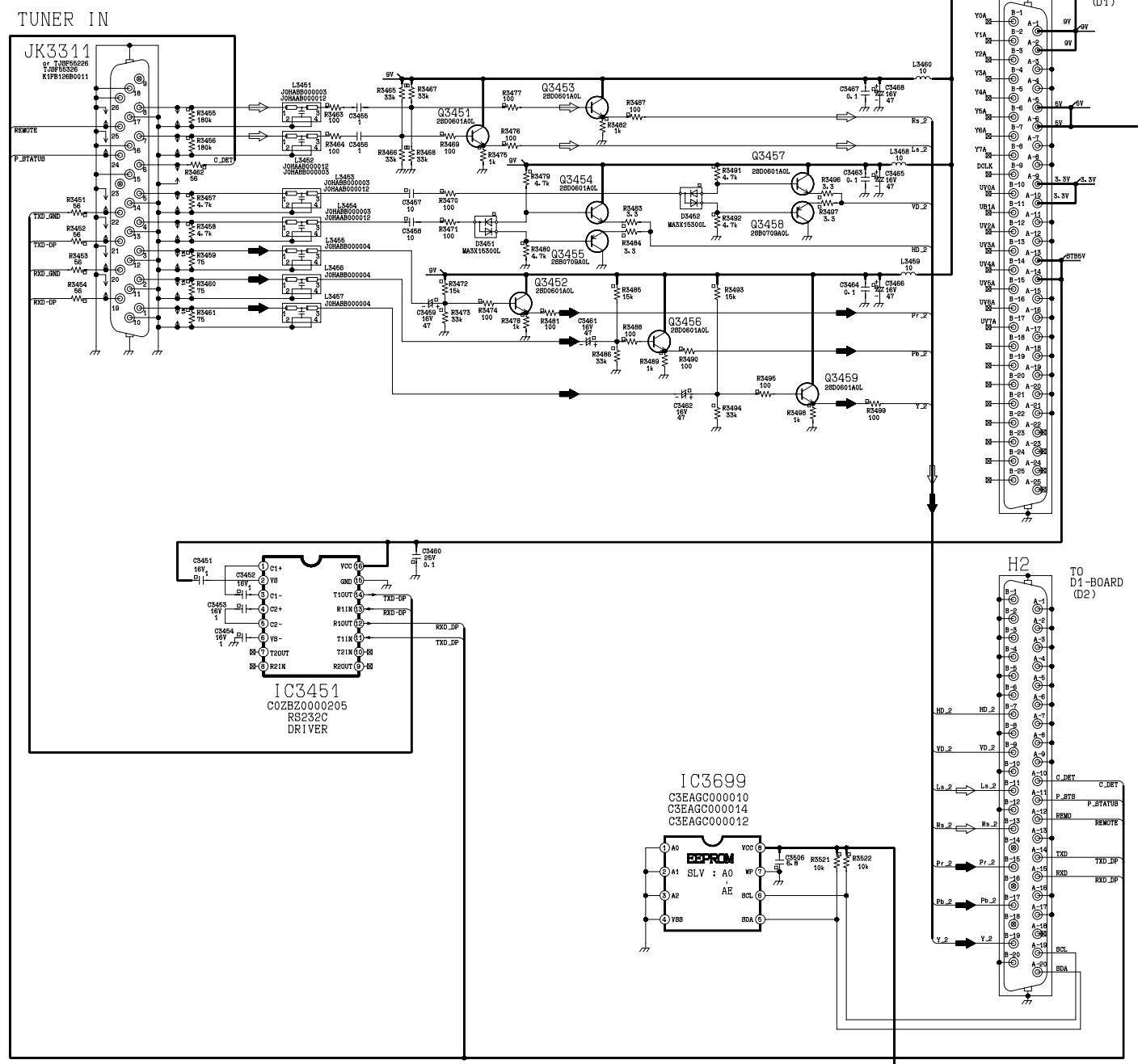
## 5.2. Replacement Parts List

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
C3451-54	TCUY1C105ZFN	C 1UF, 16V	4	F1J1C1050006
C3455,56	ECJ2VF1C105Z	C 1UF, Z, 16V	2	
C3457,58	ECJ3XB0J106M	C 10UF, M,6.3V	2	
C3459	EEVHB1C470	E 47UF, 16V	1	
C3460	ECJ2VF1E104Z	C 0.1UF, Z, 25V	1	
C3461,62	EEVHB1C470	E 47UF, 16V	2	
C3463,64	ECJ2VF1C104Z	C 0.1UF, Z, 16V	2	
C3465,66	EEVHB1C470	E 47UF, 16V	2	
C3467	ECJ2VF1C104Z	C 0.1UF, Z, 16V	1	
C3468	EEVHB1C470	E 47UF, 16V	1	
C3506	TCUY0J685MBM	C 6.8UF, 6.3V	1	F1K0J685A003
D3451,52	MA153	DIODE	2	MA3X153
H1	K1KB50B00030	50P CONNECTOR	1	
H2	K1KB40B00015	40P CONNECTOR	1	
IC3451	C0ZBZ0000205	IC	1	
IC3699	TVRJ594	IC	1	
JK3311	K1FB126B0014	CONNECTOR	1	
L3451-54	TLK212T256AL	EMI FILTER	4	J0HAAB000012
L3455-57	TLK20LFA224M	EMI FILTER	3	J0HABB000004
L3458-60	ELJPA100KB	CHIP INDUCTOR	3	
Q3451-54	2SD601A	TRANSISTOR	4	2SD0601A
Q3455	2SB709A	TRANSISTOR	1	2SB0709A
Q3456,57	2SD601A	TRANSISTOR	2	2SD0601A
Q3458	2SB709A	TRANSISTOR	1	2SB0709A
Q3459	2SD601A	TRANSISTOR	1	2SD0601A
R3451-54	ERJ3GEYJ560	M 56 OHM,J,1/16W	4	
R3455,56	ERJ6GEYJ184	M 180KOHM,J,1/10W	2	
R3457,58	ERJ6GEYJ472	M 4.7KOHM,J,1/10W	2	
R3459-61	ERJ6ENF75R0	M 75 OHM, 1/10W	3	
R3462	ERJ6GEYJ560	M 56 OHM,J,1/10W	1	
R3463,64	TAJAAH0101JV	M 100 OHM,J,1/16W	2	D0GB101JA006
R3465-68	ERJ3GEYJ333	M 33KOHM,J,1/16W	4	
R3469-71	TAJAAH0101JV	M 100 OHM,J,1/16W	3	D0GB101JA006
R3472	ERJ3GEYJ153	M 15KOHM,J,1/16W	1	
R3473	ERJ3GEYJ333	M 33KOHM,J,1/16W	1	
R3474	TAJAAH0101JV	M 100 OHM,J,1/16W	1	D0GB101JA006
R3475	ERJ3GEYJ102	M 1KOHM,J,1/16W	1	
R3476,77	TAJAAH0101JV	M 100 OHM,J,1/16W	2	D0GB101JA006
R3478	ERJ3GEYJ102	M 1KOHM,J,1/16W	1	
R3479,80	ERJ3GEYJ472	M 4.7KOHM,J,1/16W	2	
R3481	TAJAAH0101JV	M 100 OHM,J,1/16W	1	D0GB101JA006
R3482	ERJ3GEYJ102	M 1KOHM,J,1/16W	1	
R3483,84	ERJ3GEYJ3R3	M 3.3 OHM,J,1/16W	2	
R3485	ERJ3GEYJ153	M 15KOHM,J,1/16W	1	
R3486	ERJ3GEYJ333	M 33KOHM,J,1/16W	1	
R3487,88	TAJAAH0101JV	M 100 OHM,J,1/16W	2	D0GB101JA006

Ref. No.	Part No.	Part Name & Description	Pcs	Remarks
R3489	ERJ3GEYJ102	M 1KOHM,J,1/16W	1	
R3490	TAJAAH0101JV	M 100 OHM,J,1/16W	1	D0GB101JA006
R3491,92	ERJ3GEYJ472	M 4.7KOHM,J,1/16W	2	
R3493	ERJ3GEYJ153	M 15KOHM,J,1/16W	1	
R3494	ERJ3GEYJ333	M 33KOHM,J,1/16W	1	
R3495	TAJAAH0101JV	M 100 OHM,J,1/16W	1	D0GB101JA006
R3496,97	ERJ3GEYJ3R3	M 3.3 OHM,J,1/16W	2	
R3498	ERJ3GEYJ102	M 1KOHM,J,1/16W	1	
R3499	TAJAAH0101JV	M 100 OHM,J,1/16W	1	D0GB101JA006
R3521,22	ERJ3GEYJ103	M 10KOHM,J,1/16W	2	
RTL	TXN/H10JKS-K	CIRCUIT BOARD H	1	TY-42TM5H 
RTL	TXN/H10KJS-K	CIRCUIT BOARD H	1	TY-37TM5H 
		MISCELLANEOUS		
	THEA068N	SCREW	2	
	THEL023Z	SCREW	4	
	TPCB13117	CARTON BOX	1	TY-42TM5H 
	TPCB13118	CARTON BOX	1	TY-37TM5H 
	TPDF0726	PARTITION	1	
	TPEH161	AIR MAT	1	
	TQBC0511	INSTRUCTION BOOK	1	
	TQBC7062	INSTRUCTION SEET	1	
	TQE6691	POLY BAG	1	
	XTV3+10J	SCREW	1	
	XYN3+F8	SCREW	4	
	XZBT6506	POLY BAG	1	

## 6. Schematic Diagram for printing with A4 size

⚠ H-BOARD TXN/H10JKS-K (FOR TY-42TM5H)  
TXN/H10KJS-K (FOR TY-37TM5H)



TY-37TM5H/TY-42TM5H  
H-Board Block and Schematic Diagrams

TY-37TM5H/TY-42TM5H  
H-Board Block and Schematic Diagrams

## 4 Block and Schematic Diagrams

### 4.1. Schematic Diagram Notes

#### Important Safety Notice

Components identified by  $\Delta$  mark have special characteristics important for safety.  
When replacing any of these components, use only manufacture's specified parts.

#### Notes:

##### 1. Resistor

All resistors are carbon 1/4W resistor, unless marked as follows:

Unit of resistance is OHM [ $\Omega$ ] (K=1,000, M=1,000,000).

$\bigcirc$	: Nonflammable	$\boxtimes$	: Metal Oxide
$\triangle$	: Solid	$\odot$	: Metal Film
$\square$	: Wire Wound	$\otimes$	: Fuse:

##### 2. Capacitor

All capacitors are ceramic 50V capacitor, unless marked as follows:

Unit of capacitance is  $\mu$ F, unless otherwise noted.

$\otimes$	: Temperature Compensation	$\begin{array}{c} + \\ \text{---} \text{H} \text{---} \end{array}$	: Electrolytic
$\textcircled{M}$	: Polyester	$\begin{array}{c} \text{NP} \\ \text{---} \text{H} \text{---} \end{array}$	: Bipolar
$\textcircled{m}$	: Metalized Polyester	$\textcircled{T}$	: Dipped Tantalum
$\boxtimes$	: Polypropylene	$\textcircled{Z}$	: Z-Type

##### 3. Coil

Unit of inductance is  $\mu$ H, unless otherwise noted.

##### 4. Test Point

$\bigcirc$  : Test Point position

##### 5. Earth Symbol

$\text{---} \text{H} \text{---}$  : Chassis Earth (Cold)  $\downarrow$  : Line Earth (Hot)

##### 6. Voltage Measurement

Voltage is measured by a DC voltmeter.

Conditions of the measurement are the following:

Power Source .....	AC 120V, 50/60Hz (North America model)/AC220-240V, 50/60Hz (Except North America)
Receiving Signal .....	Colour Bar signal (RF)
All customer's controls .....	Maximum positions

##### 7. Number in red circle indicates waveform number.

(See waveform pattern table.)

##### 8. When arrow mark ( $\nearrow$ ) is found, connection is easily found from the direction of arrow

##### 9. Indicates the major signal flow. : Video $\Rightarrow$ Audio $\Rightarrow$

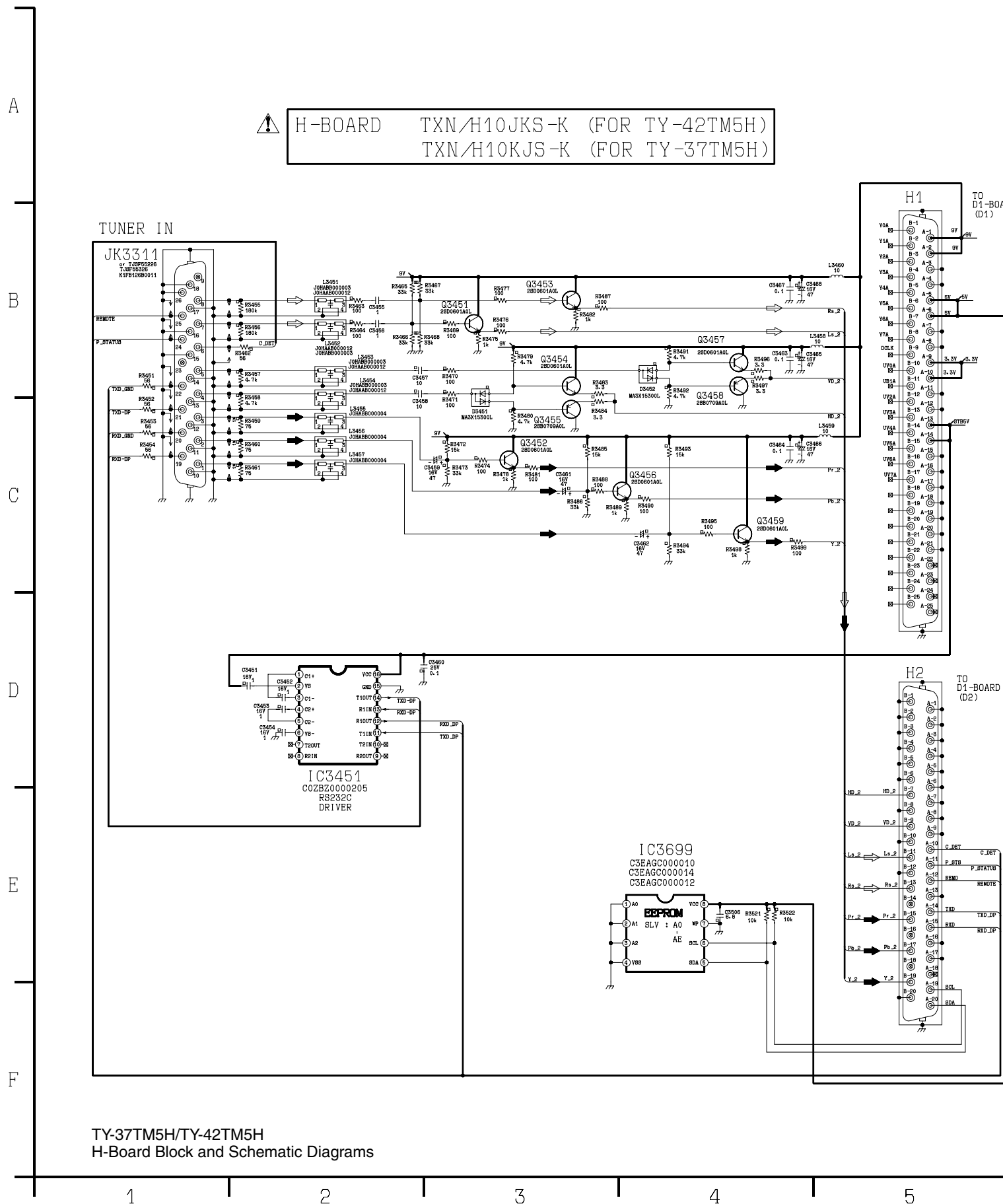
##### 10. This schematic diagram is the latest at the time of printing and subject to change without notice.

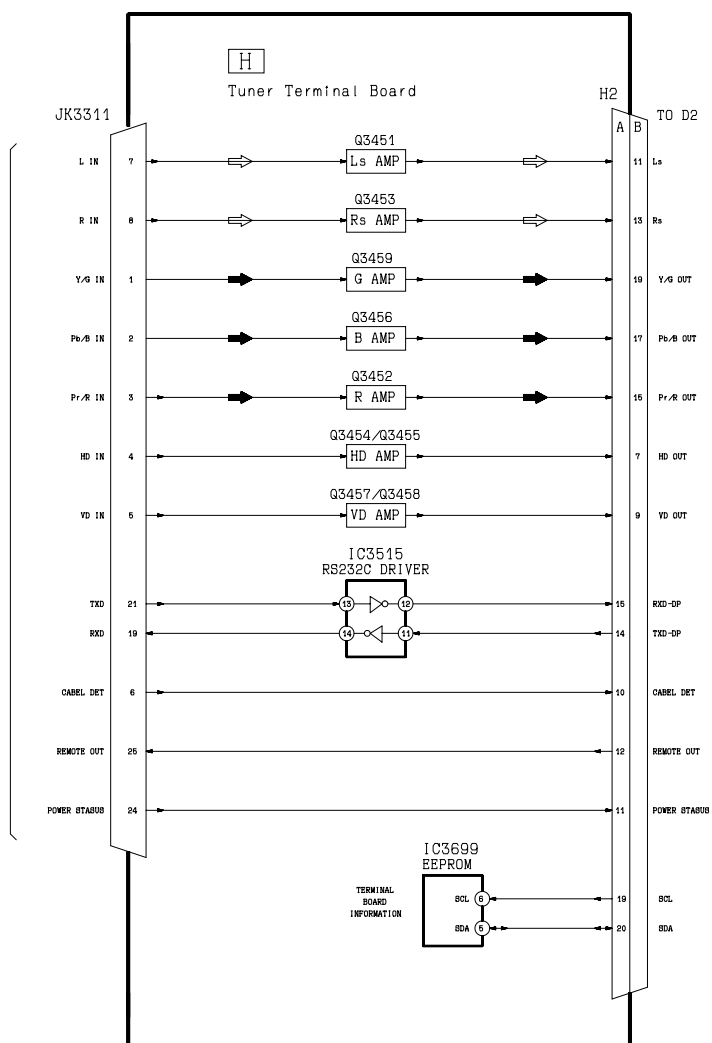


**Remarks:**

1. The Power Circuit contains a circuit area which uses a separate power supply to isolate the earth connection.  
The circuit is defined by HOT and COLD indications in the schematic diagram. Take the following precautions.  
All circuits, except the Power Circuit, are cold.  
Precautions
  - a. Do not touch the hot part or the hot and cold parts at the same time or you may be shocked.
  - b. Do not short- circuit the hot and cold circuits or a fuse may blow and parts may break.
  - c. Do not connect an instrument, such as an oscilloscope, to the hot and cold circuits simultaneously or a fuse may blow.  
Connect the earth of instruments to the earth connection of the circuit being measured.
  - d. Make sure to disconnect the power plug before removing the chassis.
2. Following diodes are interchangeable.  
MA150- MA162 (Replacement part)

## 4.2. H-Board (TY-37/42TM5H) Block and Schematic Diagrams





## TY-37TM5H/TY-42TM5H H-Board Block and Schematic Diagrams

Components identified by  mark have special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.

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2. Following diodes are interchangeable.  
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H-BOARD (COMPONENT SIDE)			
IC		TRANSISTOR	
IC3451	B-2	Q3451	A-2
IC3699	D-2	Q3452	B-3
		Q3453	A-2
		Q3454	B-2
		Q3455	B-2
		Q3456	B-3
		Q3457	B-2
		Q3458	A-2
		Q3459	B-3

H-BOARD(FOIL SIDE)  
TXN/H10JKS-K (FOR TY-42TM5H)  
TXN/H10KJS-K (FOR TY-37TM5H)

